

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A drill gripping device, comprising:
a pair of gripping jaws;
a single actuating device coupled to the pair of gripping jaws;
a force amplifying linkage coupled between the single actuating device and the pair of gripping jaws, wherein the force amplifying linkage includes:
a first camming linkage pivotally coupled between a first rocker and a first gripping jaw, and
a second camming linkage pivotally coupled between a second rocker and a second gripping jaw, ~~and rotation of the first and second rockers with respect to the first and second camming linkages provides a limited range of motion for the first and second gripping jaws; and ;~~
wherein the first camming linkage and the second camming linkage have a range of motion sufficient to grip a coupling portion of a drill stem, while preventing damage to a portion of the drill stem narrower than the coupling portion; and
a connecting portion, wherein the pair of jaws are connected to move together.
2. (Canceled)
3. (Original) The drill gripping device of claim 1, further including a pair of jaw carriers to hold the pair of gripping jaws, wherein the pair of gripping jaws are removable for replacement.
4. (Original) The drill gripping device of claim 1, wherein the single actuating device includes a single hydraulic cylinder.
5. (Previously Presented) A drill rod system, comprising:

two sets of drill gripping devices including a first drill gripping device and a second drill gripping device, wherein at least one drill gripping device includes:

a pair of gripping jaws;

a single actuating device coupled to the pair of gripping jaws;

a force amplifying linkage coupled between the single actuating device and the pair of gripping jaws, wherein the pair of gripping jaws move in a range of motion sufficient to grip only a coupling portion of a drill stem, and the gripping jaws are substantially prevented from gripping a narrower portion of the drill stem;

a connecting portion, wherein the pair of jaws are connected to move together;

a pivot joint that allows the first drill gripping device to rotate relative to the second drill gripping device; and

a device rotation actuator to control motion of the first drill gripping device relative to the second drill gripping device.

6. (Original) The drill rod system of claim 5, wherein the single actuating device includes a single hydraulic cylinder.

7. (Original) The drill rod system of claim 5, wherein the device rotation actuator includes a hydraulic cylinder.

8. (Original) The drill rod system of claim 5, wherein the two sets of drill gripping devices both include:

a pair of gripping jaws;

a single actuating device coupled to the pair of gripping jaws;

a force amplifying linkage coupled between the single actuating device and the pair of gripping jaws; and

a connecting portion, wherein the pair of jaws are connected to move together.

9. (Currently Amended) A drilling device, comprising:

a linear drive region with a linear range of motion;

a drilling drive block movable within the linear range of motion;
a drill stem rotation device located on the drilling drive block;
a drill gripping device located at an end of the linear range of motion, including:
 a pair of gripping jaws;
 a single actuating device coupled to the pair of gripping jaws;
 a force amplifying linkage coupled between the single actuating device and the pair of gripping jaws, wherein the force amplifying linkage includes:
 a first camming linkage pivotally coupled between a first rocker and a first gripping jaw, and
 a second camming linkage pivotally coupled between a second rocker and a second gripping jaw, ~~and rotation of the first and second rockers with respect to the first and second camming linkages provides a limited range of motion for the first and second gripping jaws; and ;~~
 wherein full extension of the first camming linkage and the second camming linkage results in a jaw spacing that is smaller than a diameter of a drill stem coupling portion and larger than a diameter of a middle of a drill stem section; and
a connecting portion, wherein the pair of jaws are connected to move together.

10. (Original) The drilling device of claim 9, further including a pair of jaw carriers to hold the pair of gripping jaws, wherein the pair of gripping jaws are removable for replacement.

11. (Original) The drilling device of claim 9, wherein the single actuating device includes a single hydraulic cylinder.

12. (Previously Presented) A drilling device, comprising:
 a linear drive region with a linear range of motion;
 a drilling drive block movable within the linear range of motion;
 a drill stem rotation device located on the drilling drive block;

two sets of drill gripping devices located at an end of the linear range of motion, including a first drill gripping device and a second drill gripping device, wherein the drill gripping devices each include:

a pair of gripping jaws;

a single actuating device coupled to the pair of gripping jaws;

a force amplifying linkage coupled between the single actuating device and the pair of gripping jaws, wherein the pair of gripping jaws move in a range of motion sufficient to grip only a coupling portion of a drill stem, and the gripping jaws are substantially prevented from gripping a narrower portion of the drill stem;

a connecting portion, wherein the pair of jaws are connected to move together;

a pivot joint that allows the first drill gripping device to rotate relative to the second drill gripping device; and

a device rotation actuator to control motion of the first drill gripping device relative to the second drill gripping device.

13. (Original)The drilling device of claim 12, further including a storage area to hold sections of drill stem and a handling device to move sections of drill stem between the storage area and the drilling drive block.

14. (Original)The drilling device of claim 12, further including a track system for positioning of the drilling device on a drilling site.

15. (Original)The drilling device of claim 12, wherein the end of the linear range of motion includes an end of the linear range of motion that is adjacent to a front end of drilling device.

16. (Previously Presented) A method, comprising:

actuating a first single actuator in a first drill gripping device to grip a first section of drill stem, wherein the first drill gripping device has a range of motion sufficient to grip only a coupling portion of the first section, and the first drill gripping device is substantially prevented from gripping a narrower portion of the first section;

actuating a second single actuator in a second drill gripping device to grip a second section of drill stem, wherein the second drill gripping device has a range of motion sufficient to grip only the coupling portion of the second section, and the second drill gripping device is substantially prevented from gripping a narrower portion of the second section; and

actuating a device rotation actuator and rotating the first drill gripping device with respect to the second drill gripping device to loosen a threaded connection between the first section of drill stem and the second section of drill stem.

17. (Original) The method of claim 16, wherein actuating the first single actuator includes actuating a first single actuator coupled to a pair of gripping jaws through a force amplifying linkage.

18. (Original) The method of claim 17, wherein actuating the first single actuator includes actuating a first single actuator coupled to a pair of gripping jaws that are connected to move together.

19. (Original) The method of claim 16, wherein actuating the first single actuator, actuating the second single actuator, and actuating the device rotation actuator includes actuating a first single hydraulic cylinder, actuating a second hydraulic cylinder, and actuating a hydraulic device rotation cylinder.

20. (Previously Presented) The drill gripping device of claim 1, wherein the single actuating device is coupled with the first rocker, and the connecting portion is coupled between the first rocker and the second rocker.

21. (Previously Presented) The drilling device of claim 9, wherein the single actuating device is coupled with the first rocker, and the connecting portion is coupled between the first rocker and the second rocker.